



## "PRIOR ART"

As one work example of this kind of washing station, it is conventionally indicated by JP,S62-163788,A.

The pressure gauge hose with which the deer was carried out and this well-known work example was fundamentally connected with the outlet of the pump through the terminal for pressure gauge hose rotation, or the drive. It consists of a nozzle which was connected with the tip part of this pressure gauge hose, and was bent [ were bent and it predetermined-angle-inclined ] to the main axis of this pressure gauge hose, and a free guide connected through the Snake wire which can be freely crooked in the tip part of this nozzle.

If it is in the above-mentioned composition, make high-pressure water inject behind [ slanting ] the inner wall of a waste pipe from two or more nozzles of a nozzle, and a nozzle is made to generate a driving force according to this propellent force, on the other hand, this pressure gauge hose is sent out in a waste pipe, rotating a pressure gauge hose with a terminal or a drive, and a pipe inner wall is washed.

However, in order to make said work example \*\*\*\*\* a nozzle within a pipe, it needs to rotate a pressure gauge hose at fixed velocity with a terminal or a drive. Therefore, the more the bending part of the pipe increased when the pressure gauge hose became long or, while the problem arose the more to the torque, there was a fault, like equipment itself is very expensive as a whole, and there is.

"The problem which invention tends to solve"

In order for this invention to give torque to a nozzle in view of the fault of the above Prior arts, it is not necessary to use a terminal or a drive and to rotate a pressure gauge hose.

Therefore, [ without \*\*\*\*\* / as opposed to the torque and pipe of the nozzle itself in the bending part of piping / of a nozzle receiving at least any 2-3 or more influences by these bending parts ] Moreover, the washing range is expanded, and a washing station is also inexpensive, further, along with the inner circle wall of piping, it learns from a bend of piping again, and a nozzle is to obtain the piping washing station which \*\*\*\*\* as a request and balance can improve the adhesion thing in a pipe grinding exfoliation.

"The means for solving a problem"

The nozzle bearing object attached to the intercalation end of the washing hose with which the piping washing station of this invention is intercalated in a pipe. It consists of the nozzle which has two or more nozzles to which it is supported by this nozzle bearing object, and points in the inner wall of a pipe, and at least one of the nozzles of said nozzle is characterized by being formed in the diameter of a large rather than other nozzles so that an unbalance thrust may act on a nozzle.

"EXAMPLE"

The composition of this invention is hereafter explained in detail based on an accompanying drawing.

In Fig. 1 or Fig. 6, 1 is pipes, such as a waste pipe used as piping of buildings, such as an apartment and a building, and this pipe 1 has one piece or two or more bending parts from the admission port near the faucet of a water pipe, for example to the introductory hole of a supervisor.

An end part connects 2 with the pump which was formed out of the pipe 1 and which is not illustrated, and, on the other hand, the other end is washing hose, such as a pressure gauge hose intercalated in said pipe 1 as piping to be washed.

3 is the tubed nozzle bearing object attached to the intercalation end 2a of the washing hose 2

fixed, the connection part 3a for washing hose 2 protrudes on one side wall of this nozzle bearing object 3, in addition the penetration hole 3b is formed in the side wall. In addition, the introductory hole 4 which leads the wash water from the washing hose 2 in the nozzle bearing object 3 is formed in said connection part 3a.

5 is the bearing of the miniature by which interior was carried out to the position of other side wall slippage of the nozzle bearing object 3, and this bearing 5 is \*\*\*\*(ed) on one pair of ring-like plates 6 and 7 approximately.

8 is a nozzle which is supported free [ rotation ] at the other side wall side of the nozzle bearing object 3, and has two or more nozzles 9 in a circumferential drum section. The tubed connection part 8a which has said introductory hole 4 of a nozzle bearing object and a boss open for free passage protrudes on one side wall of this nozzle 8. The tubed connection part 8a is supported at the bearing 5 which was installed through the penetration hole 3b of the nozzle bearing object 3, and was mentioned above. And as shown in Fig. 2 and Fig. 3, a total of four vanes 10 is attached to the intercalation end of the tubed connection part 8a fixed at intervals of predetermined through the vane fixed object 10a. On the other hand, the projection part 8b for connection is formed in the tip central part equivalent to the other side walls of a nozzle 8.

11 is the boss of a nozzle 8, and they are radiately formed to this boss 11 while it is open for free passage with this boss 11, respectively, as two or more nozzles 9 mentioned above shown in Fig. 2 and Fig. 4.

9a so that one unbalance thrust (torque) may act on a nozzle 8 even if there are few nozzles 9 if a deer is carried out and it is in this example The nozzle 9a of the \*\*, It is formed in the diameter of a large to 9b, and it points to each nozzles 9a, 9b, 9c, and 9d aslant in the inner circle wall 1a of a pipe 1 so that a driving force may act on a nozzle 8. By the way, three nozzles 9b, 9c, and 9d of a nozzle are made into 1mm of these apertures, for example. On the other hand, the aperture of the nozzle 9a of other diameters of different shall be 3mm, and And each nozzle 9a, The unbalance thrust (power which forces a nozzle on the inner wall of a pipe) produced with fluid injection of each nozzle when it is equally divided at an interval 90 degrees, as shown piping (9b, 9c, and 9d) in Fig. 4 changes with the difference of the nozzle 9a of the diameter of a large, and the nozzle 9c of a byway. the surface ratio of the nozzle 9a of the diameter of a large and the nozzle 9b of a byway is 9 to 1, and when the difference of the thrust uses the full flow from a nozzle 8 as per minute 0.02 cube meter and each nozzle is opened in a pipe inner circle wall at 90 angles, the power of the direction of a pipe inner circle wall arises in about 0.8 kg-f. moreover, the case where it opens at 30 angles -- the

$$\sqrt{3} / 2$$

It is the power of the direction of a \*\*\*\*\* peripheral wall, and is the original power to the

direction of movement of the washing hose 2.  $1 - \sqrt{3} / 2$

\*\*\*\* acts.

12 is a thin length-like nozzle guide member guided in contact with the inner circle wall of a pipe so that a nozzle may be \*\*\*\*(ed) along with the inner circle wall 2a of a pipe 1, when it is attached to the tip part of a nozzle 8 fixed and a nozzle 8 rotates by the injection opposing force. Although a rubber inner tube, a vinyl tube, a metallic wire rod, etc. may be used as this thin length-like nozzle guide member 12, for example, when the forward/backward moving of the bending part of a pipe is taken into consideration, it is desirable for the quality of the

material itself to have elastic power. Moreover, bending formation of the thin length-like nozzle guide member 12 is carried out so that the tip part 12a may shift from the center line of the boss 11 of a nozzle 8, as shown in [Fig. 5](#) . and it can learn from the tip part 12a at the bending part of a pipe, and thin length-like nozzle guide member 12 grade can move forward easily -- as -- a metallic sphere -- 13 is attached fixed.

In addition, the thin length-like nozzle guide member 12 is desirable in it being grade hard [ which exists so that it may not change easily, even if the tip part 12a or sphere 13 contacts the inner circle wall 1a of a pipe 1 ].

#### "OPERATION"

If it is in the above-mentioned composition and high-pressure wash water is supplied to the washing hose 2 from the pump which is not illustrated, the introductory hole 4 will be passed from the intercalation end 2a of the washing hose 2, and wash water will flow in in the nozzle bearing object 3 first. At this time, although a nozzle 8 slides to the tip part side on some with the pressure of a fluid, the tubed vane fixed object 10a attached to the intercalation end of the tubed connection part 8a of a nozzle fixed contacts a plate 7, and does not separate from it from the nozzle bearing object 3.

Next, the wash water within the nozzle bearing object 3 passes along a boss 11, and is injected from each injections 9a, 9b, 9c, and 9d. At this time, a nozzle 8 rotates to that hoop direction by injection opposing force. Carrying out a deer, this rotation power increases further by the bearing 5 which supports the vane 10 which receives the fluid energy which is going to pass a boss 11, and a nozzle 8.

Next, if a nozzle 8 rotates, the tip part 12a of the thin length-like nozzle guide member 12 or sphere 13 always contact the inner circle wall 1a of a pipe 1, and thereby, a nozzle 8 is \*\*\*\* (ed) along with the inner circle wall 1a of a pipe 1, as shown around and shown in [Fig. 6](#) .

Therefore, a nozzle 8 rotates, without [ without it separates from the inner circle wall of a pipe, or ] separating remarkably, even if it is a diameter of a large rather than the pipe for [ washing ] shows by [Fig. 1](#) temporarily now. Moreover, although the nozzle 9 points to the nozzle 8 aslant in the inner circle wall of a pipe simultaneously with rotation therefore, it moves forward with a driving force.

#### "A different work example"

Next, it explains per [ from which this invention shown in [Fig. 7](#) and [Fig. 8](#) differs ] work example. In addition, the same code is given to a portion the same as that of the work example of said this invention, or equal in explanation of this work example, and the overlapping explanation is omitted.

In the work example of [Fig. 7](#) and [Fig. 8](#) , mainly different points from the work example of said this design are Nozzle 8A and the thin length-like nozzle guide member 12A. That is, it is the point of not having prepared a vane fixed object and a vane in the intercalation end of the tubed connection part 8a of Nozzle 8A, but having formed in one the ring 15 as a stopper member which screws on the intercalation end and, on the other hand, contacts the plate 7 for bearings in Nozzle 8A. Moreover, the tip part 12a of 12A of a thin length-like nozzle guide of the point by which bending formation is carried out is the same so that it may shift from the center line of the boss 11 of a nozzle, but it is the point that the metallic sphere is not prepared in the tip part 12a.

Thus, even if constituted, it rotates according to the injection opposing force, and Nozzle 8A \*\*\*\* the inner circumference enclosure of a pipe, showing around at the thin length-like nozzle guide member 12A, and also carries out advance further.

"The effect of this invention"

If it is in this invention so that clearly from the above explanation, it is effective in next enumerating.

(1) Since at least one of the nozzles is a diameter of a large, a nozzle rotates itself by the injection opposing force of the thrust out of balance.

Therefore, in order to rotate a nozzle like before, it is not necessary to rotate a pressure gauge hose, and so it is not necessary to form the terminal or drive for washing hose rotation, and is inexpensive.

(2) Rotating, in the case of the work example by which bending formation is carried out so that a thin length-like nozzle guide member may be prepared in a nozzle and the tip part may shift from the center line of the boss of a nozzle, don't separate from an inner circle wall along with the inner circle wall of a pipe, it does not leave a nozzle remarkably, but \*\*\*\* it.

Therefore, the washing purpose can fully be attained.

(3) even if it intercalates a washing hose for a long time into a pipe -- existence of a washing hose and its length -- rotation and \*\*\*\* of a nozzle do not receive any influence by how, either

Therefore, the washing range of a pipe is expandable.

(4) Even if it pushes in a washing hose rapidly in a pipe, in the case of the work example in which the thin length-like nozzle guide member 12 has elastic power, learn from the bending part of a pipe, and it advances into a pipe smoothly.

(5) When it is the work example to which the vane which receives a fluid in a nozzle is attached, the torque of a nozzle can be heightened further.

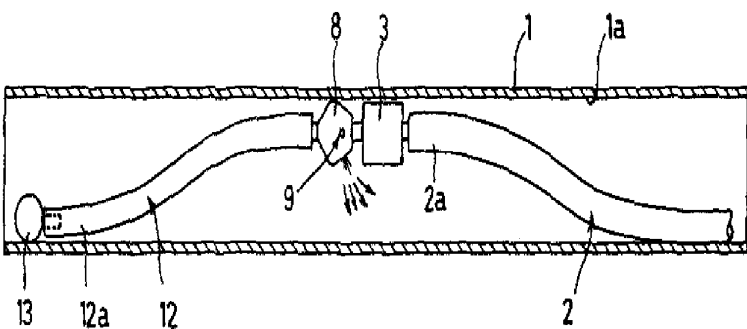
#### [Brief Description of the Drawings]

each explanatory view showing [ Fig. 1 or ] one work example of this invention -- that is, The approximate account figure in the state where Fig. 1 was intercalated in the pipe, and Fig. 2

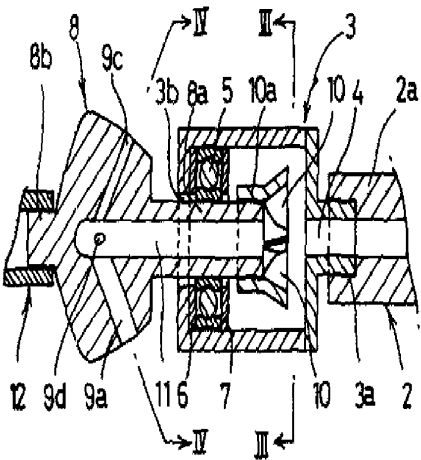
The expansion outline section explanatory view of an important section, The explanatory view, Fig. 7, and Fig. 8 in which the outline sectional view to which Fig. 3 meets the III-III line of Fig. 2, the sectional view to which Fig. 4 meets the IV-IV line of Fig. 2, and Fig. 5 showing the whole perspective view, and showing the \*\* circular voice of a nozzle are each explanatory view showing the work example from which this invention differs.

1 [ .... A bearing, 6, 7 / .... A plate, 8 8A / .... A nozzle, 9 / .... A nozzle, 10 / .... A vane, 11 / .... A boss, 12 12A / .... A thin length-like nozzle guide member 12a / .... A tip part, 13 / .... Sphere. ] .... A pipe, 2 .... A washing hose, 3 .... A nozzle bearing object, 5

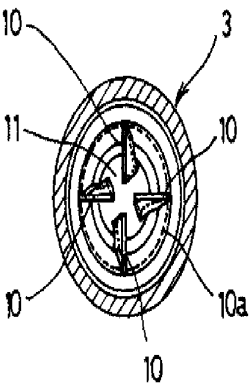
[ Fig. 1 ]



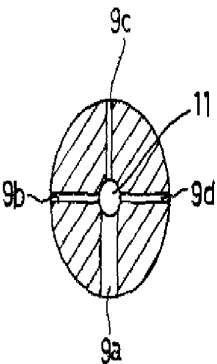
[ Fig. 2 ]



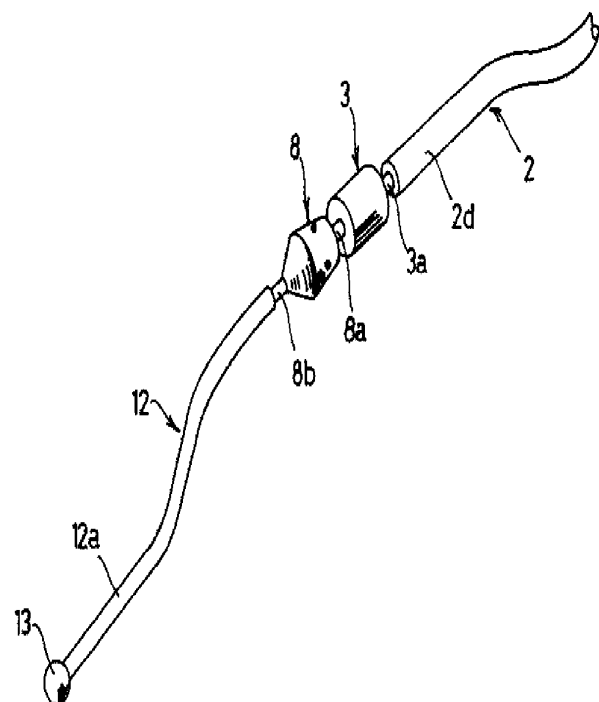
[ Fig. 3 ]



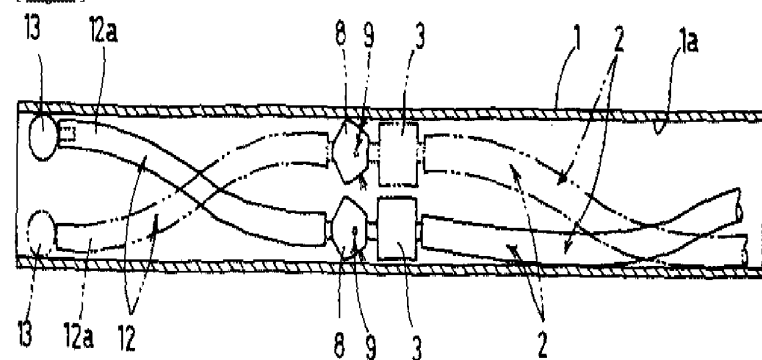
[ Fig. 4 ]



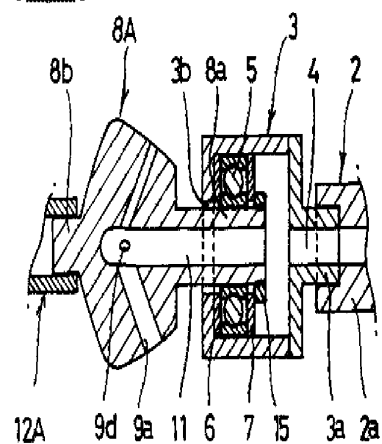
[ Fig. 5 ]



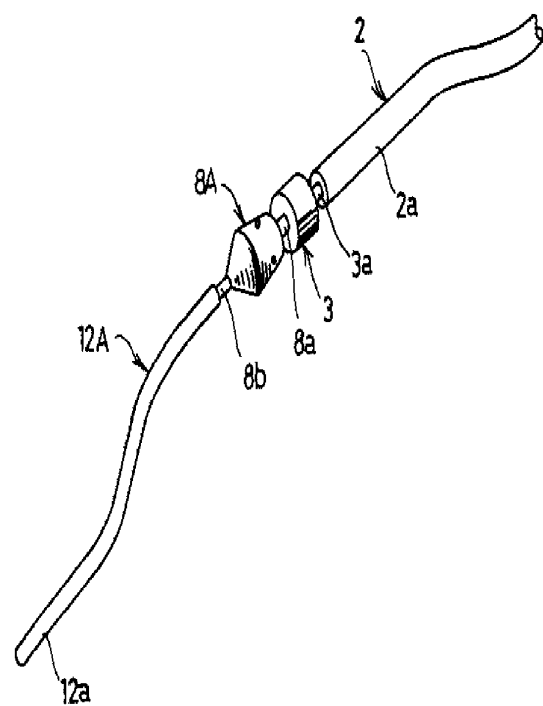
[Fig. 6]



[Fig. 8]



[Fig. 7]



[Translation done.]

[Report Mistranslation](#)

[Japanese \(whole document in PDF\)](#)